

CALIFORNIA ENERGY COMMISSION

1516 Ninth Street
Sacramento, California 95814

Main website: www.energy.ca.gov



Lead Commissioner Workshop on Proposals for Certification of Acceptance Testing Field Technicians For Mechanical Systems and Lighting Controls

The California Energy Commission Lead Commissioner for Energy Efficiency will conduct a workshop to take public comment on proposals received from the International Brotherhood of Electrical Workers (IBEW) and the California Local Unions of Sheet Metal Workers (Sheet Metal Workers). These organizations propose that only individuals who are trained and certified by specific certification programs should be allowed to perform the "acceptance testing" that is required of specific equipment by the Building Energy Efficiency Standards (Standards, California Code Regulations, Title 24, Part 6).

The purposes of this workshop are to obtain:

- more information about these proposals;
- public comment on whether the Standards should require training and certification of Field Technicians who perform acceptance testing; and
- information about what criteria the Energy Commission should require of technician training and certification programs that provide the required certifications.

Workshop participants are strongly encouraged to address the attached questions in their comments at the workshop. The workshop will be held:

MONDAY, FEBRUARY 27, 2012

1:00 p.m. - 5:00 p.m.

California Energy Commission

1516 Ninth Street

First Floor, Hearing Room B

Sacramento, CA 95814

(Wheelchair accessible)

Remote Attendance

Internet Webcast - Presentations and audio from the meeting will be broadcast via our WebEx web meeting service. For details on how to participate via WebEx, please see the “Remote Attendance” section toward the end of this notice.

Availability of Documents

This notice, the workshop agenda, and other related documents will be posted to the project website: www.energy.ca.gov/title24/2013standards/prerulemaking/documents/. Please check the website periodically for additional information. Interested persons may sign up on a list server at that website to receive email updates about the proceeding to update the Standards.

Background

Since 2005 the Standards have required that specific equipment and controls installed in nonresidential buildings be tested according to Energy Commission-adopted “acceptance testing” protocols to demonstrate their proper installation before the building is approved for occupancy. Compliance documentation must be signed by both the Field Technician who completed the acceptance testing and the licensed person who is legally responsible for the installation under the Business and Professions Code. The current Standards do not specify qualifications that the Field Technician must meet to be authorized to complete the acceptance testing.

Note that the advisory Compliance Manual for the 2008 Standards recommends that new space conditioning systems be balanced in accordance with the procedures defined by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB) or the Testing Adjusting and Balancing Bureau (TABB).

Proposals of IBEW and the Sheet Metal Workers

On November 3, 2011, and October 25, 2011, the IBEW and the Sheet Metal Workers, respectively, submitted proposals that advocated that only individuals who are trained and certified by specific certification programs should be allowed to perform the “acceptance testing” that is required of specific equipment by the Building Energy Efficiency Standards (Standards, California Code Regulations, Title 24, Part 6).

IBEW recommended¹ that the Standards “... require all advanced lighting controls related acceptance testing and documentation ... be performed by California certified general electricians who are also certified by the California Advanced Lighting Controls Training Program (CALCTP), and who are performing the work while employed by a California contractor who holds a CALCTP contractor certification, and ... acceptance

¹ Michael Mowrey, International Vice President, IBEW, letter to Energy Commission, Docket No. 10-BSTD-01, Doc No. TN-62808, Nov. 3, 2011.

testing and documentation forms be modified by providing a space for the electrician and the contractor to each write his/her name, and to each attach a copy of their appropriate CALCTP certification documentation.”

The Sheet Metal Workers recommended² that the Standards “...require that all HVAC [Heating, Ventilation and Air Conditioning] related acceptance testing and documentation ... be performed by currently certified TAB [Testing, Adjusting and Balancing] technicians certified by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB) or the Testing Adjusting and Balancing Bureau (TABB),” and the acceptance testing and documentation “... forms be modified by providing a space for the technician to write his name, certification number and agency where he attained certification.”

Evaluation of Acceptance Testing Enforcement and Effectiveness

In September 2011, the California Commissioning Collaborative, under contract to the Energy Commission, completed the report, *Evaluation of Title 24 Acceptance Testing Enforcement and Effectiveness*.³ The report stated that,

The Title 24 acceptance testing must be performed by one or more of the parties involved in design and construction – an installation contractor, an air balancing contractor, the engineer of record, or an agent of the building owner. Compliance with the testing requirement is enforced by California’s city and county governments. Specifically, those local building departments must ensure that the tests have been conducted by a competent party and that the required documentation has been provided before issuing occupancy permits. (p. 1)

The study conducted 31 interviews of building officials, testing contractors, design engineers and building owners, and visited several building departments to review how acceptance testing was addressed in the compliance process. The study made the following findings (p. iii):

- Acceptance forms may receive little review, and plans examinations are often outsourced to local engineering firms because building departments are underfunded and understaffed.
- Building departments and the firms they employ need an improved understanding of the testing procedures and the methods for reviewing test forms.
- The “Responsible Party” is very often not specified on the forms. Thus, it is unclear who is responsible for the tests, which can contribute to omission of the tests.

² Eric Emblem, Executive Administrator, Joint Committee on Energy and Environmental Policy, California Local Unions of the Sheet Metal Workers, letter to Energy Commission, Docket No. 10-BSTD-01, Doc. No. TN-62640, Oct. 25, 2011.

³ Available at http://www.cacx.org/PIER/documents/T24_Acceptance_Testing_Final_Report.pdf.

Overall, the report concludes that,

... the success of the Title 24 acceptance requirements depends on a chain of responsibility linking design engineers, contractors, sub-contractors, owners and building officials. For each link in that chain to hold strong requires training on acceptance testing procedures and motivation to change the existing practices for contracting and code enforcement. (p. iv)

Pertinent to the Sheet Metal Workers proposal, the report found that only contractors who typically perform duct leakage tests have easy access to the equipment needed for this testing. The report found that mechanical TAB contractors had the duct leakage testers, whereas other contractors did not. Installation and start-up technicians had equipment to measure airflow, but it was typically less sophisticated and more prone to measurement error. During the building testing portion of the study, the researchers observed that the mechanical contractors most familiar with the acceptance tests were those who performed TAB tasks regularly. Mechanical installation and start-up technicians; those who turn on the equipment the first time after installation, verify it has been installed properly, and exercise it through its modes of operation, were also relatively knowledgeable of the acceptance tests. (p. 9-10) The report found that, "... a required level of competency and expertise, on par with a TAB contractor, may be necessary to ensure consistent compliance." (p. 14)

California Workforce Education and Training Needs Assessment

In early 2011, the California Public Utilities Commission (CPUC) released a report completed by a consultant team headed by U.C. Berkeley titled, *California Workforce Education and Training Needs Assessment for Energy Efficiency, Distributed Generation and Demand Response (Needs Assessment)*⁴. The Needs Assessment was a key step in the implementation of the Workforce Education and Training chapter of the CPUC's *Long-Term Energy Efficiency Strategic Plan*⁵. The Strategic Plan adopted the vision that, "By 2020, California's workforce is trained and fully engaged to provide the human capital necessary to achieve California's energy efficiency and demand side management potential." (p. 70) The Needs Assessment conducted an in-depth training and education resource inventory of current efforts and an assessment of training and education resources necessary for successful delivery of the long range goals in the Strategic Plan.

The Needs Assessment lauds the California Advanced Lighting Controls Training Program (CALCTP) as a cutting edge effort to provide a high-level training program for certified general electricians, saying it is a nationally recognized model for improving work quality. CALCTP is a joint effort of Southern California Edison, the California

⁴ Available at http://www.irl.berkeley.edu/vial/publications/WE&T_Part1.pdf.

⁵ Available at http://www.cpuc.ca.gov/NR/rdonlyres/A54B59C2-D571-440D-9477-3363726F573A/0/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

Lighting Technology Center at UC Davis, and the International Brotherhood of Electrical Workers and National Electrical Contractors Association (IBEW-NECA). According to the Needs Assessment:

CALCTP is technical upgrade training that requires significant technical expertise and mandated online prerequisites provided by lighting controls manufacturers (p. 115)

Commercial electrical contracting is primarily a high-road industry. Unlike other trades, where only contractors must be licensed, California requires all practicing [general] electricians to be licensed [i.e., certified by the Department of Industrial Relations⁶]. In addition to the substantial initial training, on-the-job experience, and testing requirements, [certified general] electricians must complete 32 hours of continuing education and training every three years in order to maintain their license [certification]. These requirements mean that nearly all electricians in the state have completed an apprenticeship or extensive training program. (p. 115)

For this reason, prevailing wages for commercial sector electricians are higher than for most other trades ... workers who finish five year apprenticeship programs have made an enormous investment in their career. (p. 115)

The forty-hour CALCTP program, though rigorous, is a small addition to this broad occupational training. (p. 116)

Although the majority of training is currently offered through the IBEW-NECA's 23 joint apprenticeship and training centers, the program is also being rolled out at community college Advanced Transportation Technology and Energy campuses and IOU Energy Training Centers, making it widely available to all state certified General Electricians. (p. 115)

Strategic Plan and Lighting Action Plan

The CPUC's *Strategic Plan Lighting Chapter*⁷ and *Lighting Action Plan*⁸ are endeavoring to advance lighting energy efficiency in California. The Action Plan states,

⁶ According to the Department of Industrial Relations [Electrical Certification FAQs](#), a licensed C-10 contractor, licensed by the Contractors' State License Board, does not need to be a certified general electrician. However, employees working under that C-10 contractor would need to be certified by DIR. Also, electricians working directly for a school district or a plant would not have to be certified.

⁷ Available at <http://www.cpuc.ca.gov/NR/rdonlyres/6234FFE8-452F-45BC-A579-A527D07D7456/0/Lighting.pdf>.

⁸ Available at http://www.cpuc.ca.gov/NR/rdonlyres/1E859DC3-4563-460C-B1A6-E0CAAF04CB0C/0/LightingActionPlanFinal_June2011.pdf.

CALCTP is uniquely focused on increasing the use of lighting controls – a crucial shift to ensure success of the Strategic Plan. CALCTP is training and certifying licensed electrical contractors and state-certified general electricians in the proper design, installation and commissioning of, advanced lighting control systems. (p. 17)

CALCTP is called out as a key initiative related to the Action Plan's "Strategy 2-2: Elevate the level of professional practice and performance for designers, architectural consultants, engineers and other lighting professionals." (p. 20)

Written Comments

Workshop participants are strongly encouraged to address the attached questions in their comments. The Energy Commission appreciates receiving written comments in advance of the workshop. The Energy Commission encourages comments by e-mail. Please include your organization's name in the name of the electronic file. The Energy Commission recognizes that participants may have different or additional comments after participating in the workshop. The Energy Commission will accept additional written comments that are received by March 5, 2012. Those submitting comments by electronic mail should provide them in either Microsoft Word format or as a Portable Document (PDF) to PublicAdvisor@energy.ca.gov. Please include the docket number 10-BSTD-01 and indicate "Proposals For Certification of Acceptance Testing Field Technicians For Mechanical Systems and Lighting Controls" in the subject line or first paragraph of your comments.

You may also deliver or mail written comments to:

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 10-BSTD-01
1516 Ninth Street
Sacramento, CA 95814-5512

Participants may also provide an original and 10 copies at the beginning of the workshop. All written materials relating to this workshop will be filed with the Dockets Unit and become part of the public record in this proceeding.

Public Participation

The Energy Commission's Public Adviser's Office provides the public assistance in participating in Energy Commission activities. If you want information on how to participate in this forum, please contact the Public Adviser's Office at (916) 654-4489 or toll free at (800) 822-6228, by FAX at (916) 654-4493, or by

e-mail at PublicAdvisor@energy.ca.gov. If you have a disability and require assistance to participate, please contact Lou Quiroz at (916) 654-5146 at least five days in advance.

Please direct all news media inquiries to the Media and Public Communications Office at (916) 654-4989, or by e-mail at PublicAdvisor@energy.ca.gov. If you have questions on the technical subject matter of this meeting, please call Maziar Shirakh at (916) 654-3839.

Remote Attendance

You can participate in this meeting through WebEx, the Energy Commission's online meeting service. Presentations will appear on your computer screen, and you listen to the audio via your telephone. Please be aware that the meeting's WebEx audio and onscreen activity may be recorded.

Computer Log-on with Telephone Audio:

1. Please go to <https://energy.webex.com> and enter the unique meeting number: 928 380 279
2. When prompted, enter your name other information as directed and the meeting password: cec@1516
3. After you log-in, a prompt will ask for your phone number. If you wish to have WebEx call you back, enter your phone number. This will put your name on the participating by WebEx. If you do not wish to do that, click cancel, and go to step four. Or, if your company uses a switchboard-type of phone system where your line is an extension, click cancel and go to step 4.
4. If you do not want WebEx to call you back, then call 1-866-469-3239 (toll-free in the U.S. and Canada). When prompted, enter the meeting number above and your unique Attendee ID number, which is listed in the top left area of your screen after you login via computer. International callers can dial in using the "Show all global call-in numbers" link (also in the top left area).

Telephone Only (No Computer Access):

1. Call 1-866-469-3239 (toll-free in the U.S. and Canada) and when prompted enter the unique meeting number above. International callers can select their number from <https://energy.webex.com/energy/globalcallin.php>.

If you have difficulty joining the meeting, please call the WebEx Technical Support number at 1-866-229-3239.

Date: February 22, 2012

Mail Lists: (efficiency)

Attachment A

KEY ISSUES AND QUESTIONS FOR THE WORKSHOP

The following questions will provide the framework for discussions at the workshop. Workshop participants are encouraged to come prepared with information and input related to these questions with justification for answers.

1. Is it appropriate for the Standards to require Field Technicians who perform acceptance testing to meet specific training and certification requirements?
2. Would current Field Technicians who perform acceptance testing be disadvantaged by training and certification requirements? If yes, how should training and certification requirements be designed to provide a reasonable path for these persons to become qualified?
3. How would training and certification requirements for Field Technicians who perform acceptance testing help to address concerns related to any lack of enforcement by building departments of the acceptance requirements?
4. Are certified general electricians, who are also certified by the California Advanced Lighting Controls Training Program (CALCTP) and who are performing work while employed by a California contractor who holds a CALCTP contractor certification, uniquely qualified to serve as acceptance testing Field Technicians for lighting controls?
5. Should electricians who are not certified general electricians (e.g., C-10 licensed electrical contractors, or electricians working for school districts or plants, which are not required by state law to be certified general electricians), be allowed to serve as acceptance testing Field Technicians for lighting controls?
6. Should licensed engineers or contractors who are not CALCTP certified be allowed to serve as acceptance testing Field Technicians for lighting controls?
7. Should CALCTP certified general electricians, who are not employed by CALCTP certified-lighting contractors, be allowed to serve as acceptance testing Field Technicians for lighting controls?
8. Are testing, adjusting and balancing (TAB) contractors, who meet all of the apprenticeship, experience and testing requirements of the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB) or the Testing Adjusting and Balancing Bureau (TABB), uniquely qualified to serve as acceptance testing Field Technicians for HVAC equipment and controls?
9. Should licensed mechanical contractors, who are installing contractors, start-up contractors, or service contractors, that are not certified TAB contractors be

allowed to serve as acceptance testing Field Technicians for HVAC equipment and controls?

10. Should licensed mechanical engineers be allowed to serve as acceptance testing Field Technicians for HVAC equipment and controls?
11. Should building commissioning providers be allowed to serve as acceptance testing Field Technicians for HVAC equipment and controls and for lighting controls?
12. If additional persons other than those that are proposed by IBEW or the Sheet Metal Workers are allowed to serve as acceptance testing Field Technicians, should they be certified for professional qualifications? If so, what certifications would be appropriate for the additional persons (e.g. licensed contractors, engineers, or building commissioning providers)?
13. Related to the proposal from IBEW, what are the existing requirements or prerequisites for certified general electricians and CALCTP certification, in terms of:
 - a. Training and Education
 - i. For the certification course
 - ii. Prerequisites required to qualify for taking the certification course
 - iii. Costs associated with each of the above
 - b. Professional experience
 - c. Registration, certification or licensing fees
 - d. Professional licensing or certification
 - e. Continuing education
 - f. Renewal
 - g. Other key qualification requirements
 - h. Eligibility to waive or fulfill any of the above requirements with other licenses, degrees or qualification
14. Related to the proposal from the Sheet Metal Workers, what are the existing requirements or prerequisites for certification by AABC, by NEBB, and by TABB in terms of:
 - a. Training and Education
 - i. For the certification course
 - ii. For demonstration of the trainees' mastery of testing requirements in the field
 - iii. Prerequisites required to qualify for taking the certification course
 - iv. Costs associated with each of the above
 - b. Professional experience
 - c. Registration, certification or licensing fees
 - d. Professional licensing or certification

- e. Continuing education
 - f. Renewal
 - g. Other key qualification requirements
 - h. Eligibility to waive or fulfill any of the above requirements with other licenses, degrees or qualification
15. If TAB certification is required for acceptance testing by a Field Technician, should that be limited to acceptance testing related to airflow?
16. If CALCTP certification is required for acceptance testing by a Field Technician, should that be limited to the acceptance testing related to advanced controls that are the subject of CALCTP training?
17. What is the number, location and coverage of persons meeting the certification requirements advocated by IBEW and the Sheet Metal Workers (answer separately for AABC, NEBB, and TABB) that are in California? Specifically:
- a. Number statewide
 - b. In what cities are the certified persons located?
 - c. What locations of the state do not have certified persons within 50 miles?
 - d. What locations of the state have only a limited number of certified persons to cover the expected demand for acceptance testing?
18. Should the Energy Commission adopt criteria for approval of industry certification programs? If so, what should the criteria be? What qualifications of current certification programs should be included? Should the criteria include the following:
- a. Approval by the Energy Commission of the curriculum for the certification program to include training in the acceptance testing requirements that are applicable to that program
 - b. Demonstration of the trainee's mastery of the acceptance testing requirements in the field
 - c. Quality assurance to ensure ongoing quality performance in completing the acceptance testing
 - d. Complaint resolution to address concerns regarding certified Field Technician performance
 - e. Documented evidence of actions by the certification program to correct improper performance, provide remedial training, provide coaching or mentoring, provide penalties or decertification of certified persons who repeatedly fail to provide quality acceptance testing
 - f. Field experience prior to certification; field experience required to be under the supervision of a certified person
 - g. Certification open to both union and non-union technicians

- h. Certification program administered by non-profit organization which encourages wide participation and is certified by ANSI, ISO or other appropriate accreditation body
- i. Certification program free of conflict of interests and maintains code of ethics
- j. Certification actively works with local building departments to promote compliance and enforcement of acceptance requirements and provides acceptance requirement training free of cost to local building department personnel in conjunction with training to technicians
- k. Other recommended criteria